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F185 U.S. D. T. OF A COCULTURE LIBRARY MAY 1 7 1962 SERIAL RECORDS STIMULATING WOODLAND MANAGEMENT IN NORTH MISSISSIPPI: AN APPRAISAL Alfred Pleasonton & Sam Guttenberg

Acknowledgement

The Yazoo-Little Tallahatchie Flood Prevention Project of the Southern Region, U. S. Forest Service, cooperated in planning and carrying out this study, and four members of the Project staff made all the interviews. They were Don L. Gerred, George J. Parish, Jr., Stanley D. Pulliam, and Edmond I. Swenson.

The U. S. Soil Conservation Service participated in the planning and furnished information from its records.

The eroded Yazoo-Little Tallahatchie watershed of Mississippi is the setting for the largest land rehabilitation project in the Nation. Appraisal of the results so far shows that the program has had considerable success in encouraging landowners to improve their woodlands. Owners with above-average assets responded best, but low-income owners also participated substantially.

Major reasons for this achievement are:

- All public agricultural agencies are cooperating.
- Land-use improvements are carefully planned to the owner's needs and the capabilities of his soils.
- Public cost-sharing programs are available, and landowners are encouraged to use them.
- Trained men from the cooperating agencies visit owners to provide technical advice.

The same approach seems applicable to other problem areas.

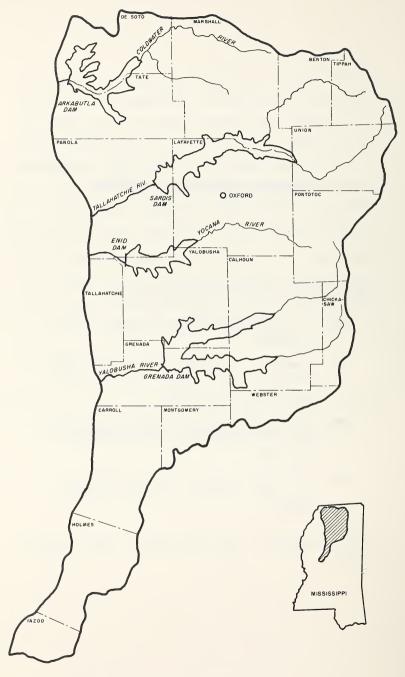


Figure 1.—Yazoo-Little Tallahatchie Project area.

How to improve management of small woodlands is a question often studied but seldom resolved. One effective system of dealing with this ageless problem is being used in the Yazoo-Little Tallahatchie watershed of Mississippi (fig. 1). A principle of the solution is close cooperation among State and Federal agencies and local civic groups interested in land use—a pooling of resources to bring about improved landowner attitudes and resource management in community after community.

This report is based on a 1960 study of a sample of the area's landowners. Participants and non-participants in the Yazoo-Little Tallahatchie (Y-LT) Flood Prevention Project were interviewed to obtain information for assessing the current system of promoting land-use adjustments, and to indicate its applicability in other areas. Though the Project deals with all forms of land use, the woodland aspects are stressed in this analysis.

THE Y-LT PROGRAM

The project was jointly undertaken in 1946 by the U.S. Forest Service and Soil Conservation Service, with local leadership from the Soil Conservation District commissioners. The four major objectives were: (1) reduction of flood water and sedimentation damage, (2) proper land use, (3) channel stabilization, and (4) improvement of the local economy. The Project, whose area of responsibility comprises 4.2 million acres of undulating and hilly land in 19 counties of north Mississippi, is the largest individual land and water management program in the Nation.

Over many decades, exploitive agriculture on highly erosive soils has made the region a depressed rural area. Forest resources suffered too. Timber stands average one thousand board feet per acre, of which 70 percent is hardwood—farm woodlands are even more depleted. The hardwoods are predominantly small, defective trees of low value. Current growth is barely one-fifth of the soil's potential.

As opportunities diminished, farm families moved out. Since 1940 the total population has dropped 20 percent, to 356,000, and the number of farms fell from 76,000 to 36,000, while average farm acreage rose from 70 to 135. While emigration has reduced population pressure on the land, the region is still characterized by low percapita income (about \$600) and fragmented holdings. The effects of severe soil erosion are widely evident.



Figure 2.—Restoring land like this is the mission of the Yazoo-Little Tallahatchie Project.

To make effective use of pooled agency resources, the Y-LT Project area was divided into 54 subwatersheds. The agencies, in consultation with the Soil Conservation District (SCD) commissioners, decide which subwatersheds are to be activated each year. Landowners in the activated watersheds are then urged to cooperate with the local SCD. Each landowner is assisted by a Soil Conservation Service technician in preparing a farm conservation plan outlining desirable land-use adjustments. The technician also explains the various assistance programs and encourages the owner to use them.

Land-use adjustment based on soil capabilities is the central theme of the Project. In the plan, cultivated crops are usually restricted to fertile bottom lands, terraces, and wide, level ridge tops. Recommended treatments are intended to reduce runoff, erosion, and sedimentation, and to increase productivity. Equal emphasis is given treatment of crop, pasture, and forest land.

Planting pines on eroded and abandoned hillside cropland, and converting upper slopes and ridge tops from low-grade hardwood to pine, together with some interplanting, are needed on nearly one million acres. Erosion from a very few properties will provide the material for downstream siltation and thereby nullify costly soil stabilization measures. For this reason success requires that virtually all owners in a subwatershed be persuaded to cooperate. To protect the public's investments in water control structures and soil stabilization practices, the agencies have found it beneficial to offset the costs of land-use adjustments, particularly for owners of limited means.

Figure 3.—Sterile sand and silt from the gully



PHOTOS BY SOIL CONSERVATION SERVICE.

have buried the fertile soil of this bottom-land field.



Two types of financial assistance are available, the choice depending upon severity of erosion.

- 1. Land is designated as a "critical area" if the soil is exposed, the slope is over 8 percent, active erosion is present, and downstream damage is occurring. When the owner signs a farm plan that includes a critical area, the entire cost of stabilizing the eroded area is paid from Federal funds. Stabilization is usually accomplished by plugging the gully and planting pines.
- 2. Upper slopes and ridges occupied by virtually worthless hardwoods are a source of severe sheet erosion. Where planting will aid in flood prevention, the land qualifies for free planting stock. The cost of deadening hardwoods and planting can be shared by the owner and the Agricultural Conservation Program (ACP). Though owners are encouraged to plant, they typically hire contractors whose crews will plant pine and deaden hardwood for a standard fee, of which about two-thirds is paid by the ACP and one-third by the landowner.

Some idea of the effectiveness of the Y-LT Program is provided by table 1. The data are from 6,134 participants. In the aggregate, these holdings amount to 1.3 million acres—one-third of the Project region. The tabulation is not a complete statement of accomplishments, for on another 2,000 properties not owned by individuals—estates, partnerships, and corporations—a substantial acreage of woodlands has been planted or improved.

Table 1.—Forest practices of 6,134 landowners participating in the Y-LT Project

Owner's annual income (dollars)	Proportion of owners	Tract size	Wood- lands fenced	Cull timber removed	Trees planted
	Percent		- Average	acreage	
Less than 1,500	17	113	7	2	20
1,500 - 2,999	23	136	8	4	19
3,000 - 4,499	29	185	12	7	25
4,500 +	31	364	24	22	57

In general, owners with greatest assets and income have been the most likely to invest in timber growing. Business and professional owners responded best to the Project. Forest investment also varied with owners' age, sex, race, and residence, but the differences were fundamentally related to level of assets.

Administrative costs for influencing landowners in the 2 lowest income strata have been high, yet the Project has succeeded in getting these people to plant an average of 20 acres apiece to pine.

STUDY METHOD

Cluster sampling was used to obtain a representative cross section of owners in the various Y-LT subwatersheds. Odd-numbered sections were randomly drawn within townships randomly picked from detailed maps. The odd section plus the following even one constituted the cluster. Clusters lying wholly or partially outside the Y-LT were rejected, as were those falling entirely on public lands, industrial forest holdings, and towns. Tracts of less than 10 acres were omitted, the purpose being to exclude most of the properties held for residence or commercial purposes.

The sample consisted of 308 owners having more than half their acreage inside the 2-section clusters. Data were obtained by personal interview (for the questionnaire, see page 17). Homogeneity of the responses, question by question, was evaluated by Chi-square tests. Among the attributes tested were income group, type of farm, residence, race, and ownership motivation. Differences in such variables as acreage and age were tested by analysis of variance.

ASSETS FACILITATE LAND-USE IMPROVEMENT

Participation in the ACP, tree planting, intention to plant, and cull timber removal were the chief indicators that owners were interested in improving land use.

Participation was greatest among landowners in the highest income group. This group also had the largest average holdings and the greatest proportion of individuals with investments in assets other than land and improvements (table 2). The overriding effects of income are further indicated by the fact that, of the 6,134 owners reached by the Project so far, 31 percent earned more than \$4,500 annually. In the general population, 23 percent of the owners are in this income category. These findings as to assets conform with those of other studies (1, 4, 5).

That 42 percent of the owners receive less than \$1,500 annually underscores the prevalence of low-income families in the region.

Numbers in italics refer to Literature Cited, page 16.

Though the point was beyond the scope of the study, it seems reasonable to assume that the sizable response from low-income owners was related to the availability of public programs that pay almost all of the costs of land rehabilitation on critical areas.

Table 2.—Owners' assets and participation in the Y-LT program

Owner's annual income (dollars)	Proportion of owners	Tract size	Proportion of owners with investments	Program participators
	Percent	Acres	Percent	Percent
Less than 1,500	42	122	16	50
1,500 - 2,999	23	217	40	57
3,000 - 4,499	12	273	49	54
4,500 +	23	805	89	78

¹ Information from 308 respondents representing 18,500 owners.

The owners with less than \$1,500 of annual income were older and included a higher percentage of women than did any other income class. Negroes comprised 16 percent of the sample. Virtually all of them earned less than \$3,000 annually and more than three-fourths were in the lowest income group.

Of the 261 farmers interviewed, 102 had invested capital in assets other than land and improvements. Among the investing farmers, 28 percent had also put at least \$5,000 into their farms over the last three years. Among non-investing farmers, 9 percent had put this amount into their farms during the same period. As will be seen, improving the farm does not necessarily lead to improved woodlands.

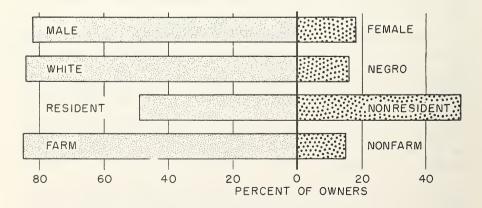


Figure 4.—Owner characteristics.

SCD PLANS HELP PROGRAM

Of the sampled owners, 156 had cooperated with their Soil Conservation Districts in drawing up plans for their tracts. Participation did not vary with income class, but degree of application did. Owners in the watersheds that had been activated earliest had the greatest proportion of plans and also the best record of having put plans into action: an indication of the benefits of sustained effort.

The proportion of owners who had adopted one or more parts of their SCD plans averaged 87 percent. Planting pine was the favored practice. Nearly 90 percent of the nonfarmers had planted trees, and even among the farmers, tree planting was as popular as all other practices combined.

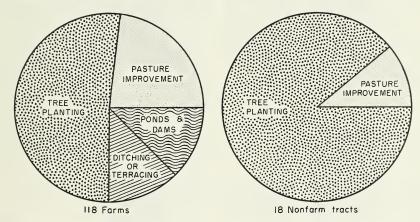
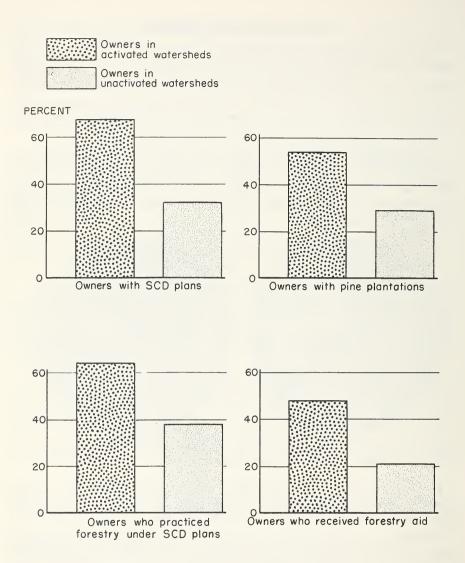


Figure 5.—Distribution of primary practices adopted from SCD plans.

Thirteen percent of the owners had not used their plans. Some cited financial reasons for not having done so, but most were indifferent.

Owners of more than two-thirds of the planned tracts had received ACP payments for forestry or agricultural practices. Payments for forest improvements had been made to 76 owners. Nearly half the owners in the top income group had received forestry payments, as contrasted to one-seventh of those in the lowest group. More low-income owners would probably have participated if they could have paid their share of the costs in labor.

Owners of 100 tracts received payments for practices other than forestry; of these, about two-thirds were for pasture improvement. Dairy farmers, nonfarmers, and cattlemen, in that order, were the chief pasture improvers.



 $\label{eq:Figure 6.---Program effects.} \textbf{Figure 6.---Program effects.}$

FACTORS AFFECTING IMPROVEMENT OF WOODLANDS

The forestry portion of the program is affected by how each owner views his woodlands and by his intentions and expectations regarding their future. In justifying forest investments, the likelihood of long-term ownership is especially beneficial.

Owners' Outlook and Tenure Problems

Most owners considered their tracts a place to live, and virtually all of them planned to retain their holdings for at least the next ten years. Half of those who planned to keep their tracts dwelt on them. Investment was the other principal reason stressed for holding land; it was given as the primary motive by 31 percent of the nonfarmers and 5 percent of the farmers.

The seemingly stable tenure implied by the responses is dubious in view of the welldeveloped trend toward fewer and larger farms. About 3 out of 10 tracts changed hands within the last 10 years. Further changes are foreshadowed by the general age of the owners-about half are in their 60's or above. Frequent land trading, combined with the generally modest cir-

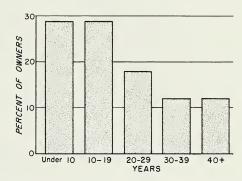


Figure 7.—Duration of tenure: land trading is common.

cumstances of an elderly population, poses two problems for the Y-LT

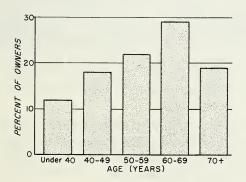


Figure 8.—Seven out of ten owners are above 50 years of age.

program. The first is how to create interest in land-use adjustments and the second is how to retain beneficial changes when tracts change hands. These problems are of immediate concern because, in the long run, aggregation of presently fragmented land holdings should contribute towards improved use.

Farm Characteristics Significant

Cotton was the main cash crop for more than half the owners. Operators of the 167 cotton farms were predominantly poor, whether

they were owners or, more typically, tenants. Their holdings have largely been producing at the subsistence level. Though every second owner had an SCD plan, the combination of tenancy and poverty made forest investments difficult for them.

At the other extreme were the cattle and dairy farmers, typically in the highest income group. About 38 percent of these progressive farmers

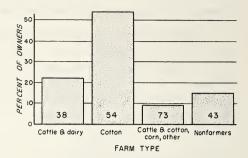


Figure 9.—Most owners are cotton farmers. Numbers on bars indicate percentage of tracts with SCD plans.

had SCD plans, and a substantial portion of the rest had made plans of their own.

Virtually all the dairymen owned and operated their farms, and 83 percent of them lived on their tracts. Many of these enterprises are being expanded and require considerable additional capital. Land unsuited for pasture and requiring cash outlays to be productive of timber will have to take second priority for funds. Where total acreage is less than 200, demand for improved pasture will probably reduce forest acreage. From the Project standpoint, the problem is how to encourage landowners to maintain the sod during droughts.

Nonfarm woodlands averaged about 100 acres, twice that of all tracts. The owners' eagerness to receive ACP payments both for forest and pasture improvements and their active demand for other tree-planting assistance made them good Project cooperators. Though they have fewer plans than the farmers, they have generally adopted forestry recommendations more completely.

Owners of the cattle-and-cotton, corn, and miscellaneous farm types were uniformly high participators in SCD planning. Having moderate capital to work with, they were commonly eager for assistance in planning and making land-use adjustments.

Owners' Planting Intentions

Forty-three percent of the owners sampled expected to plant pines. Those already having plantations were twice as likely to plant as those with none. Visits from representatives of the forestry agencies also doubled the inclination to plant—the personal contact is a stimulus.



Figure 10.—Owners of upland scrub hardwoods think they have timber.

But trees like these produce no income and control erosion less well than a good stand of pine.

The respondents' chief reason for not desiring to plant trees was lack of suitable land. This was the opinion of 109 owners or 62 percent of the non-planters. Most of the others objected because of their advanced age, concepts of costs, lack of information, and the feeling that land in trees was unproductive. The amount of planting would increase if the opportunities for stand conversion were understood by the owners, including the cattle and dairy farmers who will convert some of their woodland to pasture.

Owners' Forestry Experience Limited

Not only did a high proportion of the owners in the highest income group receive forestry assistance, but they were active in

requesting it from the various agencies. Among low-income owners, the agencies often found it necessary to stimulate a demand for tree planting.

As table 3 shows, two-thirds of the owners had not yet had technical forestry assistance; most of these were in subwatersheds awaiting activation. Regardless of tract location, cotton, cattle, and dairy farmers were the least common users of forestry assistance. In contrast, almost half the owners of nonfarm tracts had been helped.

Table 3.—Owners' sources of technical forestry assistance

assistance	
Source	Proportion of owners
	Percent
Forest Service only	23
SCS only	3
Forest Service and SCS	6
Other	3
None	65
Total	100

As program emphasis is on planting and cull timber removal, it is not surprising to find that technical assistance was not widely used by owners in marketing their timber. About half had sold timber. Four percent of the sellers had had their stumpage marked by a forester, almost a third had sold to a minimum diameter limit, and almost two-thirds had sold all their merchantable timber "by the boundary."

Only 7 percent of the owners had sold cut products. Great as is the need for marketing assistance today, it will become more acute as the supply of merchantable timber increases. On the erosive soils of this region, special timber marking and harvesting practices will likely be needed to protect the watershed.

What Landowners Wanted From Public Agencies

At the close of the interview, the owners were asked to suggest what the SCS or Forest Service could do for them. Two out of every three expressed an interest in receiving particular kinds of assistance from the public agencies. Within the broad groupings of farm versus nonfarm owners the responses were consistent. Proportionately the nonfarmers were twice as interested in forestry help as the farmers. Owners retaining their land for investment wanted help with agri-

cultural and forestry practices. The sentimental, who wished to retain the old "homeplace," were primarily interested in advice rather than action. An encouraging third of all owners were ready to accept forest management. Even with allowance for the imprecision of questionnaire surveys, it seems likely that many owners are ready to cooperate in the Project if properly approached.

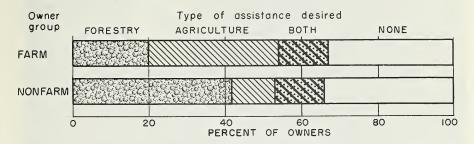


Figure 11.—Kind of help the owners wanted.

CONCLUSIONS

The Y-LT program has made considerable progress in encouraging land-use improvements. This study indicates some possibilities for further strengthening the program. In view of its success in a very difficult area, the same general approach seems suitable for other regions.

Strengthening the Y-LT Approach

Additional effort to visit landowners would be worth while. Reactions of the people interviewed disclosed that many owners must be visited and revisited before they will make land-use adjustments. The initial visit is often crucial. Currently it is made by a farm planner, but a specialist in the owner's main crop might have the advantage in gaining confidence. Once interest is created, other workers should follow up promptly.

ACP payments would be more readily taken by the prevalent low-income owners if they could pay their share of the cost in labor. Outlays for forest improvements are beyond the resources of many owners. Project workers could probably arrange for contractors of tree planting and cull-timber removal to offer landowners sufficient employment to meet their ACP requirements.

Special efforts are needed to encourage cooperation from the



Figure 12.—Visits stimulate landowners who cannot be motivated by radio, television, brochures, or demonstrations.

high proportion of aged landowners. It seems possible to convince these owners that estate values can be markedly increased at little cost to them. Long-term management plans acceptable to both owner and heir might also be developed.

Budget analyses of individual operating units could improve upon traditional SCD planning by showing the costs and returns associated with various shifts in resources. Such budgets might be an additional stimulus to improve soil management and thereby income.

Implications for Programs in Other Areas

A landholder's level of assets is the best clue to his probable response to forestry programs. This fact has been so clearly established here and in other studies that any public or private agency interested in improving woodlands can use it advantageously.

At county seats, tax assessors, sheriffs, bankers, and credit bureaus know the economic status of most landowners. Federal and State agricultural workers can provide evaluations of individual farms and their special problems. They have or can make land capability maps for each ownership. Comparisons of present and potential land uses will indicate where forest investments might pay. From such convenient and inexpensive sources public groups can get information helpful in stimulating local action (2, 3), and consulting and industrial foresters can identify owners likely to hire professional services or lease their woodlands.

As acreage held is related to assets, State estimates of woodland owners, stratified by size of holding, would be invaluable for anticipating differential response to public and private forestry efforts, and for checking on program results. The Forest Survey is the ideal organization for providing such information. Not only in the Y-LT area, but in the southern Coastal Plain generally, other characteristics of landowners are decidedly secondary to assets. It appears that ownership research in the Midsouth should be directed towards techniques for improving public and private programs.

A strengthened Y-LT approach seems eminently suitable for areas that qualify for assistance under Public Law 566, the Watershed Protection and Flood Prevention Act. In eligible watersheds, landowners have already recognized that land-use adjustments are needed and public help is available—the first step to success under the Y-LT approach.

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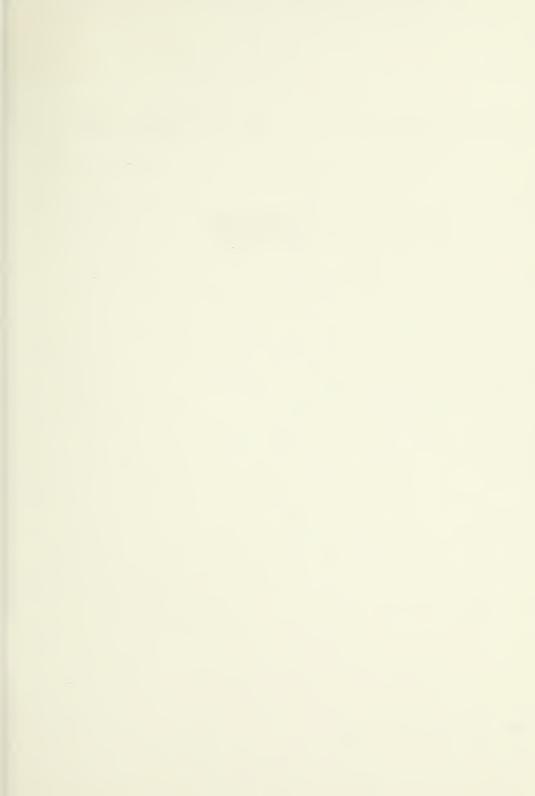
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QUESTIONNAIRE USED IN THE STUDY

1. Name of owner: 2. Mail address of owner: 3. Ownership sample code number. 4. County; Township; Range; Section 5. Code class for years in which program started. 6. Sample tract has or doen't have SCD farm plan. 7. Code class for percent range of minor watershed area covered by farm plans. 8. (a) Acreage of tract in sampling unit. (b) How much land do you own in the United States? (d) How much land do you own in the V.L.T? (e) Do you have investments other than those in land and improvements; such as bonds, stocks, and insurance? 9. How old are you? 10. Please tell me in which of these groups your net taxable 1959 income fall? (a) Less than \$1,500 (b) between \$5,000 and \$4,999 (c) between \$5,000 and \$4,499 (d) over \$4,500. 11. How many people do you earn a living for? 12. (a) Is the tract by which we located you being farmed? 13. (b) (1) Do you farm yourself? or (2) by rental? 14. FYES, (c) IF BY RENTAL, does renter object to tree planting? (d) Has farming required additional capital investment exceeding \$5,000 in the past 3 years? (e) What is your main cash crop? 11. No, 12. Do you live on this tract farmed in the past 5 years?	14. (a) When did you last sell any timber?	(d) IF TIMBER WAS NOT MARKED, which way did you sell: (1)		15. OWNERSHIPS EQUIPPED WITH SOIL CONSERVATION DISTRICT FARM PLANS.	Have you done anything under your Soil Conservation District farm plan?	(a) IF NOT, Why not?		(b) IF YES, What?	FOR OWNERSHIPS WITH NO RECORDED S.C.D. PLAN.	(c) Have you ever talked with an S.C.S. man about planning your farm?	(d) IF YES, Why wasn't the farm plan made?	A STATE OF THE PROPERTY OF T	16 (a) Which of the following people. if any, have given you technical	9	(5) SCS forester; (6) SCS technician; (7) Y-LT forester; (8) Y-LT	rechilician, (a) ourer (apocity).	ON THE PROPERTY OF THE PROPERT	IF FORESTER OR TECHNICIAN EMPLOTED.	(b) (1) Did you seek this service? or (2) was initial contact made by the technician?	(c) IF SERVICE REQUESTED, How did you happen to know it	SCS personnel; (4) County agent, (2) Accommendation; (5) public dem-	onstrations and meetings, (b) other (specify:	(
			; Township; Range				<u>a</u>		How		xell; (a) Less than \$1,500	(b) between \$1,500 and \$2,999				IF YES,	(b) (1) Do you farm yourself? or (2) by rental?				IF NO, (A) Was this tract farmed in the nast 5 years?	(I) Has this take taken as the property of] 13. Do you live on this tract?

23. How many years have you owned this tract?	24. Do you plan to keep this tract in the family another 10 years?		(b) IF NO, Why?	1 series Coming the CYC on the Decore Coming to	25. In Waat Ways, It any, could the SCS of the Forest Dervice fleip you with your lands?		26. Owner race, white or colored?	60. Artharks.							Recorder:	Date:	
IF FORESTER OR TECHNICIAN WAS NEVER EMPLOYED: (d) Why have you not used technical assistance?		 (a) Have you obtained ACP forestry payments on any of your properties? 	IF YES, (b) How many acres were planted under ACP?	(c) How many acres were released from undesirable trees? (d) How many acres of woodlands were fenced?	(e) Other payment practices (specify:	 Have you Soil Banked any of your acreage with trees? IF YES, How many acres? 	19. (a) Have you invested in forestry on any of your properties over that for which you received or will receive government payments? IF YES,	(c) now many additional acres did you release from undesirable trees?	(d) How many acres did you purchase to grow timber on? (e) Other (specify:	20. To respondents with known plantings.	(a) Do you intend to plant more trees?	(b) If NO, Why have you made this decision:	11 WIEDD DY ANTHROS MOT KNOWN D. son bear shorted	(a) If Y.E.s., to you intend to plant more trees: (b) IF NO, Why have you made this decision?		 Have you placed any of your forest properties under long-term lease or other type of permanent management contract? TF VFS 	to the second se



OCCASIONAL PAPER 185

Southern Forest Experiment Station
Philip A. Briegleb, Director
FOREST SERVICE, U. S. DEPT. OF AGRICULTURE